

## AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/945507

Filing Date: August 30, 2001

Title: FLASH MEMORY WITH LOW TUNNEL BARRIER INTERPOLY INSULATORS

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Dkt: 1303.014US1

IN THE SPECIFICATION

Please amend the paragraph beginning at page 1, line 4 as follows:

This application is related to the following co-pending, commonly assigned U.S. patent applications: "DRAM Cells with Repressed Memory Metal Oxide Tunnel Insulators," attorney docket no. 1303.019US1, ~~serial number~~ serial number 09/945,395, "Programmable Array Logic or Memory Devices with Asymmetrical Tunnel Barriers," attorney docket no. 1303.020US1, ~~serial number~~ serial number 09/943,134, "Dynamic Electrically Alterable Programmable Memory with Insulating Metal Oxide Interpoly Insulators," attorney docket no. 1303.024US1, ~~serial number~~ serial number 09/945,498, and "Field Programmable Logic Arrays with Metal Oxide and/or Low Tunnel Barrier Interpoly Insulators," attorney docket no. 1303.027US1, ~~serial number~~ serial number 09/945,512, "SRAM Cells with Repressed Floating Gate Memory, Metal Oxide Tunnel Interpoly Insulators," attorney docket no. 1303.028US1, ~~serial number~~ serial number 09/945,554, "Programmable Memory Address and Decode Devices with Low Tunnel Barrier Interpoly Insulators," attorney docket no. (Micron 01-0485), ~~serial number~~ serial number 09/945,500, which are filed on even date herewith and each of which disclosure is herein incorporated by reference.

Please amend the paragraph beginning at page 4, line 3 as follows:

Additionally, graded composition insulators to increase the tunneling probability and reduce erase time have been described by the same inventors. (See, L. Forbes and J. M. Eldridge, "GRADED COMPOSITION GATE INSULATORS TO REDUCE TUNNELING BARRIERS IN FLASH MEMORY DEVICES," application ~~serial no.~~ serial no. 09/945,514.

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Please amend the paragraph beginning at page 27, line 24 as follows:

Some results have been obtained which demonstrate that at least a limited range of high temperature, super-conducting oxide films can be made by thermally oxidizing Y-Ba-Cu alloy films (see generally, Hase et al., "Method of manufacturing an oxide superconducting film," U.S. Pat. 5,350,738, Sept. 27, 1994). The present inventors have also disclosed how to employ "low temperature oxidation" and short thermal treatments in an inert ambient at 700C in order to form a range of perovskite oxide films from parent alloy films (see generally, J. M. Eldridge, "Low Cost Processes for Producing High Quality Perovskite Dielectric Films," application ~~Serial No.~~  
~~Serial No. 09/945,137~~). The dielectric constants of crystallized, perovskite oxides can be very large, with values in the 100 to 1000 or more range. The basic process is more complicated than that needed to oxidize layered films of transition metals. (See Example III.) The TM layers would typically be pure metals although they could be alloyed. The TMs are similar metallurgically as are their oxides. In contrast, the parent alloy films that can be converted to a perovskite oxide are typically comprised of metals having widely different chemical reactivities with oxygen and other common gasses. In the Y-Ba-Cu system referenced above, Y and Ba are among the most reactive of metals while the reactivity of Cu approaches (albeit distantly) those of other noble metals. If the alloy is to be completely oxidized, then thin film barriers such as Pd, Pt, etc. or their conductive oxides must be added between the Si and the parent metal film to serve as: electrical contact layers; diffusion barriers; and, oxidation stops. In such a case, the Schottky barrier heights of various TM oxides and perovskite oxides in contact with various metals will help in the design of the tunnel device. In the more likely event that the perovskite parent alloy film will be only partially converted to oxide and then covered with a second layer of the parent alloy (recall the structure of Figure 2), then the barrier heights will represent that developed during oxide growth at the parent perovskite alloy/perovskite oxide interface. Obviously, such barrier heights cannot be predicted *ab initio* for such a wide class of materials but will have to be developed as the need arises. This information will have to be developed on a system-by-system basis.